



A Comparative Study of Selected Physical Fitness Variables among Sports Persons and Non-Sports Persons

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Abstract

Physical fitness is an important determinant of health, functional capacity, and sports performance. Regular participation in sports is generally associated with physiological and motor adaptations that may distinguish athletes from individuals who do not participate systematically in sports. This review examines differences in selected physical fitness variables between sports persons and non-sports persons, with particular emphasis on speed, strength, agility, endurance, and flexibility. Relevant findings from previous studies were reviewed and compared to assess the influence of regular sports participation on these fitness components. The available literature generally indicates that athletes demonstrate better performance across several physical fitness variables, particularly strength, agility, speed, and endurance, although the magnitude and pattern of differences vary by sport type, training exposure, age, sex, and assessment method. Flexibility findings appear to be comparatively variable due to sport-specific movement demands and differences in training practices. Overall, the reviewed evidence supports a positive association between systematic sports participation and the development of physical fitness. The review also highlights the importance of consistent assessment methods and further comparative research across different populations and sporting backgrounds.

Keywords: Physical fitness, sports persons, non-sports persons, speed, strength, agility, endurance, flexibility.

1. Introduction

Physical fitness is a fundamental component of health and physical performance, representing an individual's ability to perform daily activities and physical tasks effectively. It includes several components such as muscular strength, speed, agility, endurance, and flexibility. These



components are influenced by factors including age, sex, lifestyle, habitual physical activity, and participation in structured exercise or sports.

Regular sports participation exposes individuals to repeated and systematic physical activity. Depending on the nature of the sport, training may involve running, jumping, rapid changes of direction, muscular contractions, and sustained physical effort. Such activities can produce physiological and neuromuscular adaptations that contribute to improved physical fitness. Research has shown that participation in structured sports and higher levels of physical activity are associated with favorable physical fitness characteristics [1]–[3].

Sportspeople generally undergo regular training designed to improve the specific physical and motor abilities required for performance. In contrast, non-athletes may engage in routine physical activity but usually lack the frequency, intensity, and structured training associated with competitive or organized sports. Consequently, differences may occur between these groups in fitness variables such as speed, strength, agility, endurance, and flexibility.

Comparing sports persons and non-sports persons can therefore provide useful information regarding the relationship between systematic sports participation and physical fitness. Previous research has reported differences between trained and untrained or less-active individuals; however, the extent of these differences may vary by sport type, training background, participant characteristics, and fitness assessment methods. The present review examines and synthesizes available evidence concerning selected physical fitness variables among sports persons and non-sports persons, with particular attention to speed, strength, agility, endurance, and flexibility.

2. Selected Physical Fitness Variables

2.1 Speed

Speed is the ability to perform a movement or cover a distance in the shortest possible time. It is a key component in many sports, particularly those requiring quick acceleration and rapid movement. Regular sports training improves neuromuscular coordination, reaction time, and sprint performance, resulting in higher speed levels among sports persons than non-sports persons [4], [5].



2.2 Strength

Strength refers to the ability of muscles to produce force against resistance. It contributes to athletic performance, injury prevention, and efficient movement. Sports persons generally develop greater muscular strength through systematic training, whereas non-sports persons often exhibit comparatively lower strength levels due to reduced training exposure [2], [6].

2.3 Agility

Agility is the ability to change body position or direction quickly while maintaining balance and control. It is essential in sports such as kabaddi, football, basketball, and badminton. Regular practice of sport-specific movements enhances agility through improved coordination and reaction speed [7].

2.4 Endurance

Endurance is the ability to sustain physical activity over an extended period without excessive fatigue. It includes both cardiorespiratory and muscular endurance. Sports participation improves oxygen utilization, cardiovascular efficiency, and fatigue resistance, making endurance one of the most consistently improved fitness components among trained individuals [1], [8].

2.5 Flexibility

Flexibility is the ability of a joint to move through its full range of motion. It supports efficient movement and helps reduce the risk of injury. Although sports persons generally demonstrate better flexibility than non-sports persons, the level of improvement often depends on the specific demands and training practices of each sport [3], [9].

3. Comparative Analysis of Sports Persons and Non-Sports Persons

A comparison of sports persons and non-sports persons generally indicates that regular participation in organized sports is associated with better physical fitness. Sports persons are repeatedly exposed to structured training involving running, jumping, resistance exercises, rapid movements, and sport-specific skills. These activities promote cardiovascular, muscular, and



neuromuscular adaptations that may contribute to superior performance across several fitness components.

In terms of speed and agility, sports persons generally perform better because regular training involves acceleration, sprinting, changes of direction, and coordinated movements. Repeated exposure to such activities improves movement efficiency and neuromuscular coordination. However, the extent of improvement depends considerably on the demands of the particular sport.

Differences are also evident in strength and endurance. Strength-oriented and power-based sports can produce substantial adaptations in muscular force and power, whereas endurance-oriented training improves aerobic capacity and resistance to fatigue. Research comparing athletes with non-athletes has demonstrated distinct physiological adaptations associated with different forms of athletic training [10], [11].

For flexibility, the differences are less consistent. Sports requiring a large range of motion may produce greater flexibility, while participation in sports without a strong flexibility component does not necessarily result in substantial differences from non-sports persons. Therefore, flexibility appears to depend more on sport-specific training than on other fitness variables.

Overall, existing evidence suggests that sports persons tend to demonstrate a more developed physical fitness profile than non-sports persons. Nevertheless, differences should not be attributed solely to sports participation, as age, sex, training history, type of sport, habitual physical activity, and methods of fitness assessment can influence the observed results.

4. Review of Related Studies

Several studies have examined the relationship between sports participation and different components of physical fitness. The available literature generally indicates that individuals engaged in regular sports training exhibit better physical and physiological characteristics than their non-athletic or less active counterparts. However, the magnitude of these differences varies with the sport, training duration, age, sex, and methods used for fitness assessment.



Degens et al. [12] compared endurance athletes, power athletes, team-sport athletes, and non-athletes and observed distinct differences in physiological characteristics among the groups. Their findings demonstrated that long-term participation in different forms of sports produces specific adaptations rather than identical improvements across all fitness components.

Comparative research involving athletes and non-athletes has also reported advantages associated with sports participation in variables such as muscular performance, aerobic fitness, balance, and functional physical capacity [13]–[15]. Sports involving repeated sprinting and changes of direction particularly contribute to speed and agility, whereas endurance-oriented activities are more strongly associated with cardiorespiratory fitness.

The literature further suggests that strength and flexibility vary considerably according to sport-specific requirements. Athletes participating in strength- and power-oriented activities may exhibit greater muscular strength, while flexibility advantages are more evident in activities involving regular stretching and large ranges of joint movement. Therefore, the physical fitness profile of sports persons should be interpreted in relation to their training background rather than sports participation alone.

Table 1. General Findings Reported in Comparative Literature

Fitness Variable	General Finding in Sports Persons	Major Training Influence
Speed	Generally higher	Sprint and acceleration training
Strength	Generally higher	Resistance and power training
Agility	Generally higher	Change-of-direction and skill training
Endurance	Generally higher	Aerobic and repeated-effort training
Flexibility	Variable to moderately higher	Sport-specific mobility and stretching

Overall, previous studies support the view that systematic participation in sports contributes positively to physical fitness. Nevertheless, differences in participant characteristics, training



exposure, and testing procedures make direct comparison among studies difficult and should be considered when interpreting the available evidence.

5. Discussion

The reviewed literature indicates that regular sports participation is associated with favorable development of several components of physical fitness. Sports persons generally demonstrate greater speed, strength, agility, and endurance than non-sports persons, although the magnitude of these differences varies with the nature and intensity of training.

Improved speed and agility among sports persons are largely associated with repeated sprinting, rapid changes in direction, reaction-based movements, and sport-specific skill practice. Such activities promote neuromuscular coordination and movement efficiency. Similarly, greater strength may result from repeated muscular loading during training, particularly in sports involving jumping, sprinting, resistance, or explosive movements.

The difference in endurance can be explained by regular exposure to sustained and repeated physical effort. Consistent training produces cardiovascular and metabolic adaptations that improve the ability to perform physical activity and resist fatigue. In contrast, flexibility does not show an equally consistent pattern because its development is strongly influenced by sport-specific requirements and the amount of mobility or stretching incorporated into training.

The findings should nevertheless be interpreted cautiously. Sportspeople do not constitute a homogeneous group, and different sports produce distinct fitness adaptations. Age, sex, training experience, competitive level, lifestyle, and the testing procedures used in individual studies may also influence reported differences. Therefore, the available evidence supports an overall advantage of sports participation for physical fitness, while emphasizing that individual fitness components are influenced by the specific characteristics of training.

6. Research Gap

Although several studies have compared the physical fitness of sports persons and non-sports persons, important gaps remain in the existing literature. Many studies focus on individual fitness



components or specific groups of athletes, making it difficult to obtain a comprehensive comparison across speed, strength, agility, endurance, and flexibility.

Differences in fitness tests, participant age, sex, sporting background, training experience, and definitions of non-sports persons also limit direct comparison among studies. In particular, non-sports participants may differ considerably in their habitual physical activity, even when they are not involved in organized sports.

Future research should therefore employ standardized fitness assessment procedures and clearly defined participant groups. Studies involving larger, more diverse populations, as well as comparisons by sport type and training experience, would provide a clearer understanding of the relationship between systematic sports participation and physical fitness.

7. Conclusion

The present review indicates that regular participation in sports is positively associated with the development of physical fitness. Sports persons generally demonstrate better speed, strength, agility, and endurance than non-sports persons, primarily because of their regular exposure to structured and sport-specific training. Flexibility also tends to benefit from sports participation, although differences are less consistent and depend largely on the nature of the sport and training programme.

The reviewed evidence further indicates that differences in physical fitness cannot be explained by sports participation alone. Factors such as age, sex, training experience, type of sport, habitual physical activity, and assessment methods may influence the observed outcomes. Overall, systematic sports participation appears to contribute to a more developed physical fitness profile and emphasizes the value of regular physical activity for improving functional and performance-related fitness.

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